(C) REMARKS

Claims 1-12 are pending in the present patent application. In the Office Action, the Examiner has rejected claims 1-12 under 35 U.S.C. §102 (a) and (b) as being anticipated by He et al., U.S. Patent No. 5,798,982. In addition, the Examiner has rejected claims 1-12 under 35 U.S.C. §102 (a) and (b) as being anticipated by Partyka et al., U.S. Patent No. 5,515,335.

He et al. (5,798,982) discloses a method for inverting 3-D and 4-D seismic survey data to obtain acoustic impedance models. The method comprises constructing a low-frequency impedance trend from well log data, converting the impedance trend by trace-to-trace interpolation into a 3-D seismic impedance model, computing covariance functions for the original seismic data and the impedance model assuming a Gaussian probability distribution, extracting seismic source wavelets from autocorrelation functions of the seismic traces from the original seismic data, and iteratively computing a inversion of the seismic data from the source wavelets to an impedance model using the covariance functions as constraints in a modified Levenberg-Marquardt algorithm.

The output of the method of the present application is AVA (seismic amplitude variation with incidence angle) or its equivalent, AVO (seismic amplitude variation with offset). Claim 1 and its dependent claims have been amended to clarify this point. He et al. describes a method that could conceivably use AVA or AVO data as input in its method to determine impedance, but can not produce AVA or AVO data as output, as in the present application.

He et al. only describes inversion in the context of obtaining impedance rather than seismic reflection amplitude (see, for example, col. 2, lines 22-28 of He et al.). In fact, He et al. teaches away from the usefulness of reflection amplitude inversion (see col. 2, lines 28-40 of He et al.).

He et al. neither teaches nor suggests "determining a seismic amplitude for each time window, using time samples within the time window", as in the present invention, as embodied in amended independent claim 1. Thus, the subject matter of independent claim 1 and dependent claims 2-12 of the present application cannot be derived from He et al.

Partyka et al. (5,515,335) discloses a method for using a Fourier transform to process 2-D or 3-D seismic data to display the existence and extent of thin beds. The method comprises selecting a zone of interest in a seismic data line or volume, applying a discrete Fourier transform to produce a spectral decomposition of every seismic trace intersecting the zone of interest, forming the spectral decompositions into a tuning cube in which spatial relationships are preserved, and displaying slices of the tuning cube representing the spectral coefficients at each Fourier frequency. A homogenous thin bed may display a characteristic expression in the Fourier frequency domain of a periodic sequence of spectral notches in the amplitude spectrum with frequency spacing inversely proportional to the temporal thickness of the thin bed.

The method of Partyka et al. only employs amplitudes in the context of Fourier spectral decomposition coefficients rather than reflection amplitudes (see col. 16, line 65 to col. 17, line 6 of Partyka et al.). In fact, Partyka et al. teaches away from the usefulness of using reflection amplitudes in determining thin beds (see col. 6, lines 29-44 of Partyka et al.).

Partyka et al. only describes time windows in the context of short Fourier transform windows covering the zone of interest (see col. 17, lines 37-41 and col. 18, lines 25-27 of Partyka et al.).

Partyka et al. only mentions AVO as a complication for thin bed determination, rather than the object of the method (see col. 6, lines 45-47 of Partyka et al.). Partyka et al. describes a method that could conceivably use AVA or AVO data as input to determine thin beds, but can not produce AVA or AVO data as output, as in the present application.

Partyka et al. neither teaches nor suggests "determining a seismic amplitude for each time window, using time samples within the time window", as in the present invention, as embodied in amended independent claim 1. Thus, the subject matter of independent claim 1 and dependent claims 2-12 of the present application cannot be derived from Partyka et al.

New claims 13 and 14 are added to reflect the use of the method of the present application to produce AVA or AVO as output. Support for these claims is found in Paragraphs [0006] on page 2 and [0034] on page 8 of the present application, as filed.

Thus, the subject matter of independent claim 1 and the dependent claims of the present application cannot be derived from He et al. (5,798,982) or Partyka et al. (5,515,335), either alone or in combination, in an obvious way.

Thus, applicant believes that amended claims 1-14 of the present application are ready for acceptance. Applicant respectfully requests their reconsideration and acceptance.

Respectfully submitted,

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